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Late Broods of The Codling Moth

By B. S. Pickett

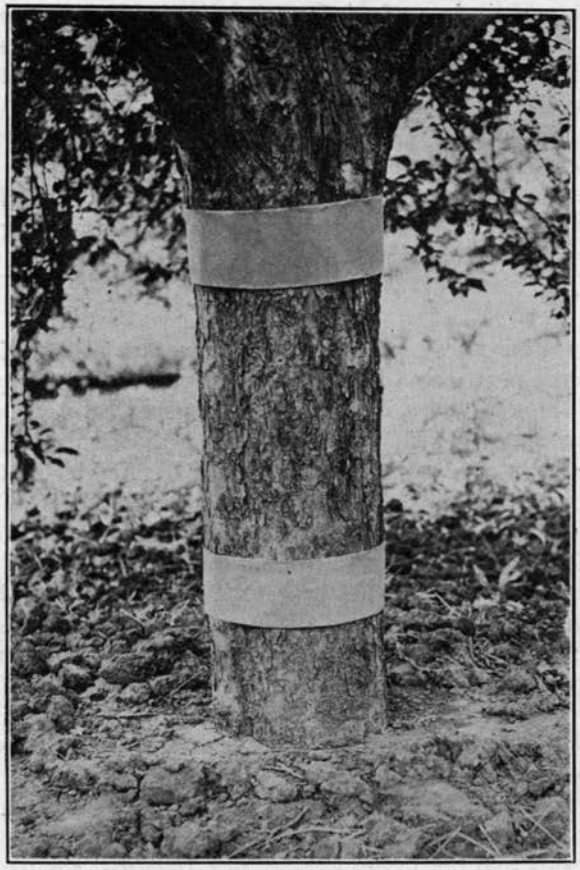

FIG. 1.—TREE BANDED TO TRAP CODLING MOTH LARVAE

LATE BROODS OF THE CODLING MOTH

By B. S. PICKETT, Assistant Chief in Pomology

Reports from many parts of Illinois indicate a very serious early attack from the apple growers' enemy, the codling moth. The first brood during the present season is far more numerous than the first brood of 1913. In 1913, in spite of a comparatively small early infestation, the first brood was numerous enough to be the progenitor of an exceedingly numerous second brood, which in its turn, in southern Illinois, at least, was the progenitor of a very destructive third brood. Bearing in mind the sad losses of the apple growers during the season of 1913 from late broods of codling moth, resulting from a comparatively early infestation, it is only reasonable to fear that even more serious losses may result during the present season, unless some unforeseen climatic condition or some unexpected parasite develops to check the pest.

The object of this circular is to call especial attention to the urgent need for strenuous efforts to combat this insect during the present season. Two means of control are recommended: spraying frequently and thoroly with arsenate of lead, and trapping the worms in bands on the trunks of the trees.

SPRAYING

The regular spray schedule for the season's operations in the apple orchard must be supplemented with additional sprays in order *to keep the apples coated at all times with a protective film of poison.* The regular spray schedule calls for no application during a period lasting from three, or at most four, weeks after the bloom till the first or second weeks in July. In the interval the apples grow rapidly in size, and parts of their surfaces are left temporarily unprotected. Codling moth larvae attempting to enter thru the sides of the apples can do so without danger at these unprotected places. During the present season the adult moths have been emerging thru a long period, egg laying apparently having commenced in the southern part of the state early in May and continuing to the present time, June 15. The number of larvae hatching is so numerous that even tho many may be killed in endeavoring to enter thru the poison-filled calyx cups, or thru the sides of the apples where spray still remains, enough of them find the unprotected surfaces to disfigure great quantities of fruit and render it worthless for market.

In seasons like the present, therefore, the fruit should be thoroly sprayed just as soon as the grower satisfies himself that worms are

daily entering thru the sides of the apples, *regardless of the frequency, thoroness, or recency of the previous sprays.* Commonly the spray, if applied during June, should consist of 6 pounds of paste arsenate of lead, 6 pounds of freshly slaked lime, and 100 gallons of water. In orchards where blotch is serious, it would be well to use Bordeaux mixture with the arsenate of lead instead of lime.

The second brood of codling moth begins to lay its eggs, in southern Illinois, about the first week in July, and it is necessary to spray at this time so that the apples may present a surface completely protected with a poison coating. This application is included in the regular spraying schedule, a combined insecticide and fungicide (arsenate of lead and Bordeaux mixture) being recommended. The time of making this spray becomes proportionately later in central and northern Illinois.

During the season of 1914, and in ensuing seasons when the infestation is equally serious, the writer recommends spraying again for second brood codling moth from the third week in July, in southern Illinois, to the first week in August, in northern Illinois. Finally, should a third brood attack the very late varieties, as occurred in the southern part of the state in 1913, a final supplementary application must be made as soon as the grower is convinced that larvae are again entering the apples. This application will be from the first week in September, in the extreme south of the state, to the third week, in central Illinois. A third brood rarely, if ever, occurs in northern Illinois. Arsenate of lead and lime in the proportions above recommended for the first supplementary spraying should be used for these applications. If growers are obliged to spray for blotch and bitter rot, arsenate of lead should be added to the fungicides applied, as a precaution against late brood codling moths.

Trapping the Larvae

As a supplement to spraying, attempts should be made to trap and destroy the larvae, thus reducing the number of adults, and by this means, of course, lessening the numbers of insects in future broods. The codling moth larva or apple worm, after growing to full size in the apple, leaves the fruit and searches for a dark protected place behind a rough piece of bark, or elsewhere, to change into a pupa or chrysalis and finally become a brown winged moth. If the apple has fallen to the ground, the larva generally makes its way to the trunk of the tree and crawls up to a suitable place. Some of the worms may also drop from the trees by means of silken threads. If the larva crawls out of the fruit while the apple still remains on the tree, it then crawls down the branches, generally to the trunk, in search of a similar hiding place. By furnishing suitable hiding places on the trunk just above the ground and again just below the main branches,

the larvae will gather there in large numbers to make their transformations, and while there may easily be destroyed.

The most readily available materials for these traps are bands made of thick brown wrapping paper, and burlap. The paper bands should be 4 or 5 inches wide, with three or four folds. They are most conveniently cut from a roll which should be from twenty-four to thirty-six inches wide, depending on the circumference of the tree trunks. The burlap bands should be three folds of the cloth in thickness, secured by wrapping a single band three times around the tree or by folding the material to begin with. The bands, placed as already described, are fastened to the tree with two short nails. If burlap is used, the heads of the nails may be nipped off, or short finishing nails used, so as to permit the easy removal and replacing of the bands by the examiner. If paper is used, the nail heads must be left on and the nails removed with a claw hammer each time the bands are examined.

To secure the maximum efficiency from the traps, the rough bark on the lower branches and trunks of the trees must be scraped off to prevent part of the larvae from using the old bark scales for hiding places.

The bands should be placed on the trees about the middle of June or as soon afterwards as possible. Every ten days during the remainder of the season they must be inspected and the trapped larvae destroyed. They are most easily killed by passing the bands thru a clothes wringer, which can be transported thru the orchard on a wheelbarrow.

While banding fails to catch all the larvae, it does trap enough to make it a most important supplement to spraying, and in this season, when every effort must be strained to save the crop from the late worms, growers are earnestly urged to employ trapping as a supplement to their sprays.

NOTE.—Figures 1, 4, 5, 6, and 7 from photographs by W. A. Ruth. Figures 2 and 3 from Ill. Ex. Sta. Bul. No. 114 by W. J. Lloyd.

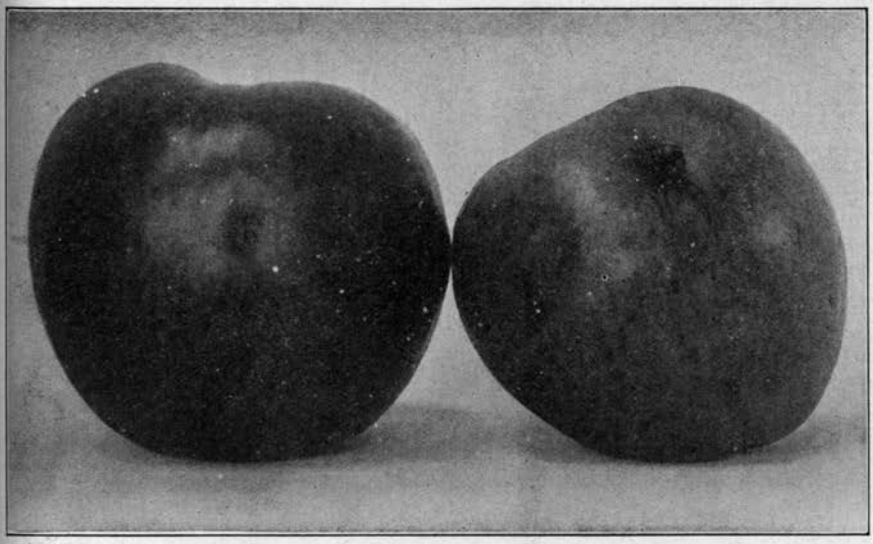

FIG. 2.—ENTRY OF CODLING MOTH LARVAE THRU THE SIDE OF THE APPLE

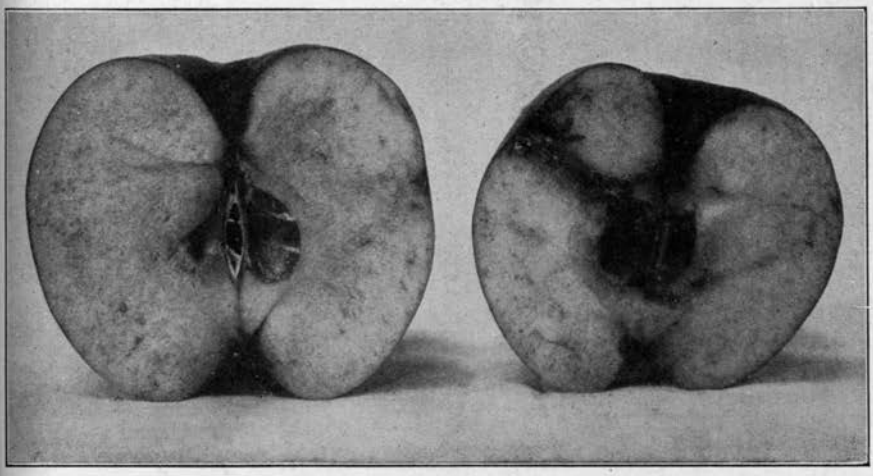

FIG. 3.—WORK OF SECOND BROOD OF CODLING MOTH. WORM ENTERING APPLE ON THE LEFT STOPPED NEAR SURFACE

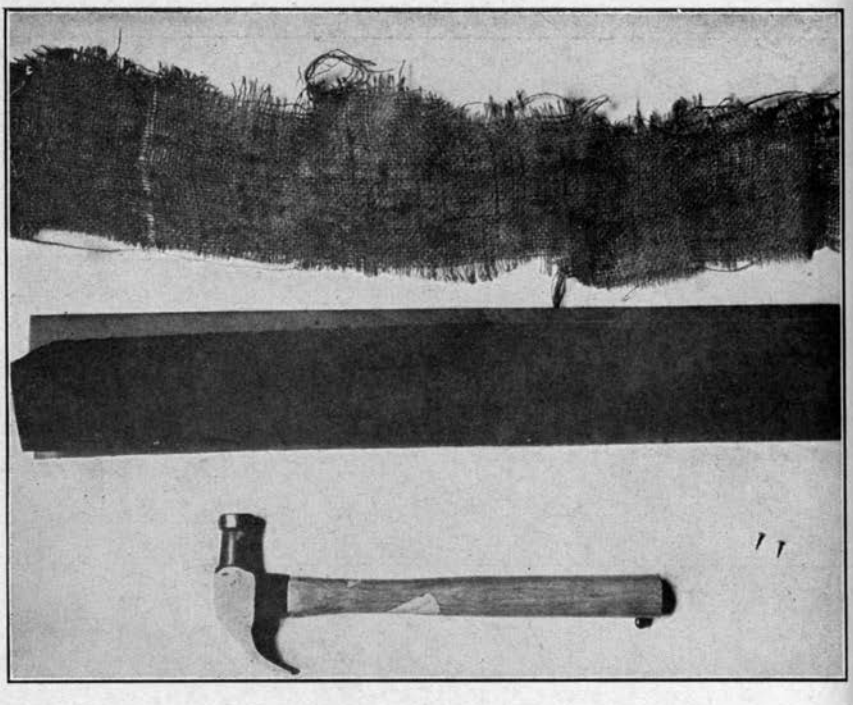

FIG. 4.—BURLAP AND PAPER BANDS

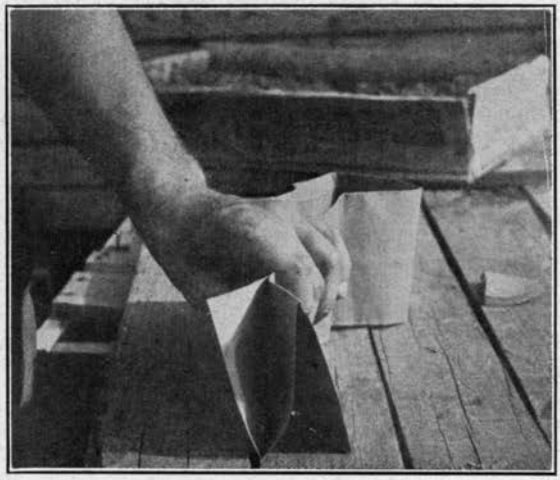

FIG. 5.—SHOWING METHOD OF FOLDING PAPER BANDS

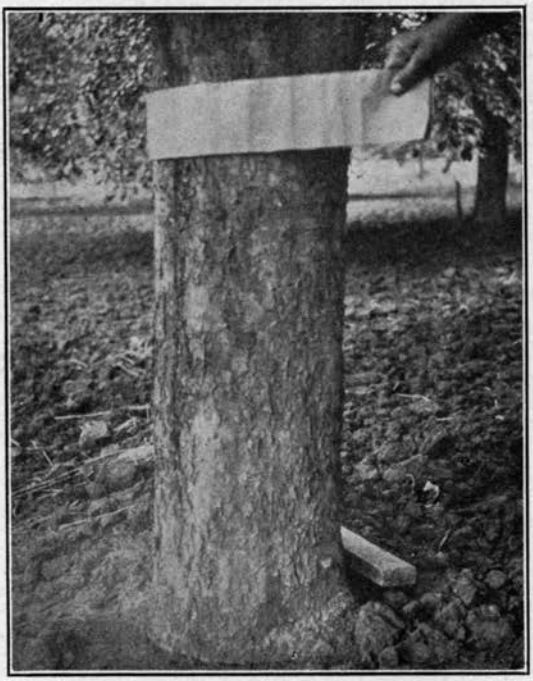

FIG. 6.—PLACING TRAP BAND ON TRUNK OF APPLE TREE

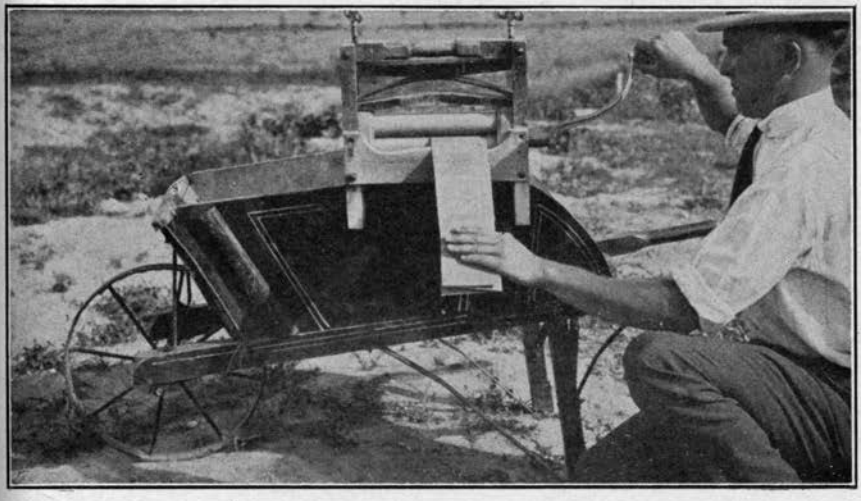

FIG. 7.—METHOD OF DESTROYING LARVAE IN THE BANDS